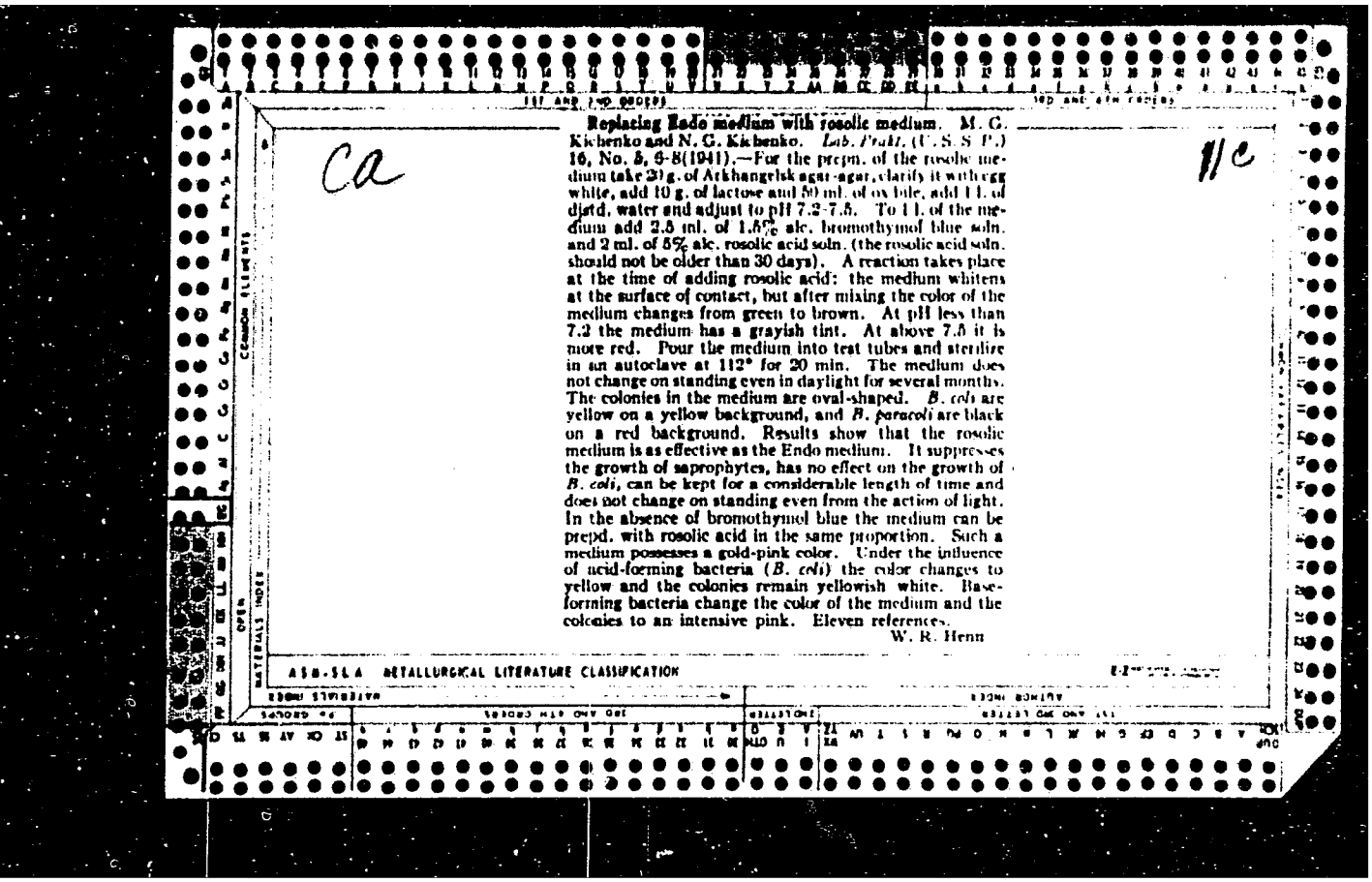
KICHENKO, M.G.

Effectiveness of the IMViC test in the identification of microbes of the Coli aerogenes group isolated from water. Znur. mikrobiol., epid. i imm. 41 no. 2:145-146 F '64. (MIRA 17:9)

1. Institut obshchey i kommunal'noy gigiyeny imeni Sysina AMN SSSR.



Replacing Endo medium with rosolic medium. M. G. Kichenko and N. G. Kichenko. *Lab. Prakt.* (U.S.S.R.) 16, No. 5, 6-8(1941).—For the prepn. of the rosolic medium take 2½ g. of Arkhangelsk agar-agar, clarify it with egg white, add 10 g. of lactose and 50 ml. of ox bile, add 1 l. of distd. water and adjust to pH 7.2-7.5. To 1 l. of the medium add 2.5 ml. of 1.5% alc. bromothymol blue soln. and 2 ml. of 5% alc. rosolic acid soln. (the rosolic acid soln. should not be older than 30 days). A reaction takes place at the time of adding rosolic acid: the medium whitens at the surface of contact, but after mixing the color of the medium changes from green to brown. At pH less than 7.2 the medium has a grayish tint. At above 7.5 it is more red. Pour the medium into test tubes and sterilize in an autoclave at 112° for 20 min. The medium does not change on standing even in daylight for several months. The colonies in the medium are oval-shaped. *B. coli* are yellow on a yellow background, and *B. paracoli* are black on a red background. Results show that the rosolic medium is as effective as the Endo medium. It suppresses the growth of saprophytes, has no effect on the growth of *B. coli*, can be kept for a considerable length of time and does not change on standing even from the action of light. In the absence of bromothymol blue the medium can be prepd. with rosolic acid in the same proportion. Such a medium possesses a gold-pink color. Under the influence of acid-forming bacteria (*B. coli*) the color changes to yellow and the colonies remain yellowish white. Base-forming bacteria change the color of the medium and the colonies to an intensive pink. Eleven references.

W. R. Henn

KICHENKO, M.G.;KORSH, L.Ye.;KICHENKO, N.G.

Examination of water for enteric bacteria. Gig. sanit., Moskva no.12: 12-17 Dec 1952. (CIML 23:4)

1. Of the Institute of General and Communal Hygiene of the Academy of Medical Sciences USSR.

USSR / Microbiology. Hygienic Microbiology. F-4

Abs Jour : Ref Zhur - Biol., No 20, 1958, No. 90881

Author : Khlebnikov, N. I.; Kozhinova, L. A.; Lebedeva, M. V.; Kichenko, N. G.

Inst : Not given

Title : The Problem of Using Sewage Water for Fertilizer on Farm Land

Orig Pub : Gigiyena i sanitariya, 1957, No 2, 31-35 (res. Eng.)

Abstract : A study was made of the influence of non-vegetative and vegetative irrigation of podzolic sandy and loam soils by sewage waters (clarified and sedimented) on the sanitary condition of the soil and the vegetables cultivated in it. The sanitary state of the soil and vegetables was determined by a coli index and by the number of eggs of the helminths, and a sanitary count was also done on the soil. In the vegetative period accompanied by the use of clarified

Card 1/2 Inst. Gen + Communal Hygiene AMS USSR

LEBEDEVA, M. V.

"Hygienic evaluation of the experience of [illegible] irrigation [illegible] drainage waters on agricultural lands."

report submitted at the 13th All-Union Congress of Physiologists, Public Hygienists and Bacteriologists, 1958.

KICHENKO, V. I.
SHIBAYEV, G. A.

Botany, Medical

Comparative anatomic-morphological study of the leaves of Solomon's seal and lily of the valley; materials for the 9th pharmacopoeia. Apt. de lo no. 3, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952.
UNCLASSIFIED.

CHETVERIKOVA, L.S.; KICHENKO, V.I.; UTKIN, L.M.

Investigation of plants native to the U.S.S.R. for their saponin content. Trudy VILAR no. 11:202-228 '59. (MIRA 14:2)
(SAPONINS) (BOTANY, MEDICAL)

MADAYEVA, O.S.; SEROVA, N.A.; CHETVERIKOVA, L.S.; SHEYNKER, Yu.N.; KICHENKO, V.I.

Investigation of some saponin-bearing plants for their content steroid saponin. Trudy VILAR no. 11:229-236 '59. (MIRA 14:2)
(SAPONINS) (BOTANY, MEDICAL)

KICHENKO, V.I.

Dioscorea as a source of raw material for the synthesis of steroid hormones. Med. prom. 15 no.3:17-20 Mr '61. (MIRA 14:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut lekarstvennykh i aromaticheskikh rasteniy.
(STEROIDS) (DIOSCOREA)

SOKOLOVA, L.N.; KICHENKO, V.I.; ROSTOTSKIY, B.K.; GUBINA, G.P.

Diosponin, a new drug for treating atherosclerosis. Med. prom. 15 no.7:43-45 Jl '61. (MIRA 15:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut lekarstvennykh i aromaticheskikh rastenii.
(ARTERIOSCLEROSIS)
(DIOSCOREA--THERAPEUTIC USE)

KICHENKO, V.I.; PANINA, V.V.

Diogenin content in the rhizomes of some [illegible] species introduced in the Moscow region. [illegible] 1 [illegible] '65. (MIRA 18:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut [illegible] i aromaticheskikh rasteniy i Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni [illegible], Moskva.

KICHENKO, V.I.

Introduction of Dioscorea in the Moscow region. Biul. Glav. bot. sada no.57:26-35 '65. (MIRA 18:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut lekarstvennykh i aromaticheskikh rasteniy, Moskva.

PANTELEYEV, G.F.; KICHENKO, Ye.A.

Geology of the northeastern end of the Tuarkyr group of folds.
Trudy SGPK no.2:35-48 '61. (MIRA 14:11)
(Kara-Kalpak A.S.S.R.--Petroleum geology)
(Kara-Kalpak A.S.S.R.--Gas, Natural--Geology)

KICHENKO, Ye.A.

Study of the accuracy of calculating the petroleum reserves in B_2 layer of the Krasnyy Yar field, Kuybyshev Province. Trudy VNII no.36:97-114 '62. (MIRA 15:11)
(Krasnyy Yar region (Kuybyshev Province)--Petroleum geology)

KICHENKO, Ye.A.

Determining efficient limits in prospecting for an oil pool. Trudy VNII no.36:227-236 '62. (MIRA 15:11)
(Petroleum geology)

KICHERMAN, V.V.

Kidney function following the effect of ionizing radiation on the body (clinical experimental study). Trudy Kish. gos. med. inst. 24:80-86 '64 (MIRA 18:1)

1. Moldavskiy nauchno-issledovatel'skiy institut onkologii. Nauchnyye rukovoditeli - doktor med. nauk S.D. Goligorskiy i prof. P.P. Khokhlov.

L 14695-66 EWT(m)/EPF(n)-2/EWP(t)/EWP(b)/EWA(h) IJP(c) JD/JG/DM

ACC NR: AP6008251 SOURCE CODE: UR/0089/65/019/005/0454/0456

AUTHOR: Gruzin, P. L.; Kichev, A. Z.; Minayev, V. M.; Samosadnyy, V. T.; Hsi, Ch'ang-sung

ORG: none

TITLE: Determination of spectral characteristics of isotope neutron sources by means of paired scintillation crystals of the type LiI(Eu)

SOURCE: Atomnaya energiya, v. 19, no. 5, 1965, 454-456

TOPIC TAGS: fast neutron, neutron spectrum, gamma background, gamma radiation, lithium compound, isotope, scintillation, crystal

ABSTRACT: A method is considered for subtracting the gamma background in measurements of spectra from neutron sources. Two paired LiI(Eu) crystals were used, one enriched 90% in ^6Li and other 99.4% in ^7Li. The response of the two crystals to gamma radiation was assumed equal; the efficiency of the ^6Li-enriched crystal for fast neutrons was 150 times greater than that of the ^7Li-enriched crystal, so it could be assumed the latter was practically insensitive to fast neutrons. The neutron intensity at a given energy was thus the difference in the pulse heights from the two crystals. Differential neutron spectra measured for Po-Be, Pu-Be, and Po-B sources are presented and discussed. [NA]

SUB CODE: 18, 20 / SUBM DATE: 25Feb65 / ORIG REF: 001 / OTH REF: 003

Card 1/1 UDC: 539.16.08

KICHEV, Georgi

Neurovascular connections in the skin of sheep. Izv Zhivotn nauki 1 no.3:55-66 '64.

1. Institute of Animal Husbandry, Kostinbrod.

KICHEVA, Ye.F.; MUKHITDINOV, B.N.

Development of X-ray service in Tajikistan. Zdrav.Tadzh. 9 no.3:52-54 My-Je '62. (MIRA 15:8)
(TAJIKISTAN--RADIOLOGY,MEDICAL)

KICHEV, G. K.

Alteration of the hereditary nature in birds by interspecies change of protein in the egg. N. S. Nesterov, G. Slavchev, and G. K. Kichev (V. P. Kolarov Agr. Inst., Plovdiv, Bulgaria). *Izvest. Akad. Nauk S.S.S.R., Ser Biol.* 1955, No. 5, 103-17.—About 10 ml. of protein substance was removed by hypodermic needle from a 3-day (or less) turkey egg and injected into a 3-day hen egg. On hatching the Leghorn hens thus produced are regarded as vegetative hybrids with improved characteristics. G. M. Kosolapoff

(2)

A-U Agric Inst in Kolarova

REYNARU, I.K. [Roinaru, I.]; BELOSHAPKINA, T.A. KICHEVSKAYA, L.S.

Heterohemagglutination reaction in Botkin's disease. Vop.med. virus. no.9:71-76 '64. (MIRA 18:4)

1. Iz Tallinskogo nauchno-issledovatel'skogo instituta epidemiologii, mikrobiologii i gigiyeny i iz Tallinskoy gorodskoy infektsionnoy bol'nitsy.

ISHMUKHAMETOVA, G.Z., dotsent; KICHEYEVA, G.V.

Use of hypothiazide in the compound treatment of hypertension. Kaz. med. zhur. no.1:31-34 Ja-F '62. (MIRA 15:3)

1. Kafedra propedevtiki vnutrennikh bolezney (zav. - dotsent G.Z. Ishmukhametova) Kazanskogo meditsinskogo instituta na baze 7-oy gorodskoy bol'nitsy (glavnyy vrach - S.G. Sorkina).
(THIADIAZINE) (HYPERTENSION)

KICHIBEKOV, K.B.

Continuous washing machine for reusable wooden containers.
Kons.i ov.prom. 15 no.1:18-20 Ja '60. (MIRA 13:5)

1. Leningradskiy kombinat pishchevykh kontsentratov.
(Food industry--Equipment and supplies)

1. KICHIGIN, A. A.

2. USSR 600

4. Plants, Effect of Temperature on

7. Possible methods of increasing the resistance to spring frost in sprouts of early grain crops, Dokl. AN SSSR, 88, No. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

KICHIGIN,A.A.

Effect of the atmospheric electricity on plant growth and development. Dokl. AN SSSR 103 no.3:513-515 J1'55. (MLRA 8:11)
(Plants, Effect of electricity on)

KICHIGIN, A.A., kand. biolog. nauk

Transformation of spring wheat into winter wheat in Komi A. S. S. R. and some features of obtained wheat. Agrobiologiia no.5: 681-688 S-O '61. (MIRA 14:10)

1. Komi gosudarstvennyy pedagogicheskiy institut, g. Syktyvkar.
(Komi A. S. S. R.--Wheat)

KICHIGIN, A.F., aspirant.

Device for investigation of rock disintegration processes by cutting machines. Nauch.trudy MGI no.15:99-103 '55. (MIRA 10:10)
(Coal mining machinery--Testing)
(Dynamometer) (Rocks)

[illegible]H[illegible], [illegible]. [illegible].

[illegible], [illegible]. F.: "Investigation of the [illegible] machines." [illegible] Inst [illegible] I. V. Stalin, Moscow, 195[illegible]. (Dissertation [illegible] of Candidate in Technical Science.)

[illegible] Letopis', No. 20, 1956. Moscow.

KICHIGIN, A.F.

Experimental investigation of the mechanical properties of oil shale. Nauch. trudy MGI no.21:33-40 '57. (MIRA 11:9)
(Oil shales--Testing)

KICHIGIN, A.F.

Testing equipment for the investigation of coal and rock breaking processes by cutter tools. Nauch. trudy MGI no.21:123-136 '57.
(Mining machinery--Testing) (MIRA 11:9)
(Dynamometer)

KICHIGIN, A.F., dotsent; KUDRYASHOV, V.P., dotsent; SALTANOV, A.D., inzh.; YAREMA, V.D., inzh.

Experimental research on breaking coal from a massif. Izv.vys. ucheb.zav.; gor.zhur. no.4:97-105 '60. (MIRA 14:4)

1. Karagandinskiy politekhnicheskiy institut. Rekomendovana kafedroy gornykh mashin i rudnichnogo transporta.

(Coal mines and mining)

KICHIGIN, A.F., kand.tekhn.nauk; MATSUTKEVICH, O.V., inzh.; SALTANOV, A.D., inzh.; SEVERINOV, V.S., inzh.

Device for determining the parameters of rock breaking by high-energy impact. Izv. vys. ucheb. zav.; gor. zhur. no. 11:127-132 '60. (MIRA 13:12)

1. Karagandinskiy politekhnicheskiy institut. Rekomendovana kafedroy gornykh mashin i rudnichnogo transporta Karagandinskogo politekhnicheskogo instituta.
(Mining machinery) (Dynamometer)

VICHIGIN, A.F., dotsent; LOBODA, P.A., inzh.; SALTANOV, A.D., inzh.; YAREMA, V.D., dotsent

Experimental design of the cutter of a stoping cutter-loader. Izv. vys. ucheb. zav.; gor. zhur. no.11:91-94 '61. (MIRA 15:1)

1. Karagandinskiy politekhnicheskiy institut. Rekomendovana kafedroy gornykh mashin i rudnichnogo transporta.
(Mining machinery)

KUCHUGIN, A.F., inzh.; KAZAK, Yu.N., inzh.; YANTSEN, I.A., inzh.; SALTANOV, A.D., inzh.

Mechanical hydraulic mining machine. Izv. vys. ucheb. zav.; gor. zhur. no.12:72-75 '61. (MIRA 16:7)

1. Karagandinskiy politekhnicheskiy institut. Rekomendovana kafedroy gornykh mashin i rudnichnogo transporta.
(Mining machinery)

KICHIGIN, A.F., inzh.; KAZAK, Yu.N., inzh.; BERNARDOV, G.G., inzh.

Device for measuring deformations of a rock in breaking it with mining machines. Izv. vys. ucheb. zav.; gor. zhur. no.12: 76-78 '61. (MIRA 16:7)

1. Karagandinskiy politekhnicheskiy institut. Rekomendovana kafedroy gornykh mashin i rudnichnogo transporta.
(Mining machinery) (Rocks--Testing)

KICHIGIN, A.F., inzh.; SALTANOV, A.D., inzh.; YAREMA, V.D., inzh.

Testing a mining cutter-leader equipped with a new working part. Shakht.stroi. 6 no.4:19-22 Ap '62. (MIRA 15:4)

1. Karagandinskiy politekhnicheskiy institut (for Kichigin, Saltanov). 2. Kombinat Karagandashakhtostroy (for Yarema).
(Mining machinery—Testing)

KICHIGIN, A.F.; KAZAK, Yu.N.; BERNARDOV, G.G.

Experimental two-tube surge hydraulic giant. Izv. v.s. uch. zav.; gor. zhur. 5 no.6:197-199 '62. (MIRA 15:9)

1. Karagandinskiy politekhnicheskiy institut. Rekomendovana kafedroy gornykh mashin i rudnichnogo transporta.
(Boring machinery--Hydraulic driving)

KICHIGIN, A.F.; POLOVNEV, G.P.

Characteristics of the arrangement of actuating mechanisms of stone drifting machines. Nauch. trudy KNIUI no.13:235-241 '64 (MIRA 18:1)

KICHIGIN, A.F.; PIROGOV, V.K.; SALTANOV, A.D.; LAZUTKIN, A.G.

Narrow-cut UKO-2 cutter-loader working on the principle of breaking away coal from the massif. Nauch. trudy KNIUI no.13: 241-243 '64 (MIRA 18:1)

KICHIGIN, A.F.; POLOVNEV, G.P.; SALTANOV, A.D.; YAREMA, V.D.

Fracture of rock by breaking away. Nauch. trudy KNIUI no.13:
243-247 '64 (MIRA 18:1)

SAGINOV, A.S.; KICHIGIN, A.F.; BERNARDOV, G.G.

Experimental, impulse, double barrel, IDV-1 water jet with ultra-high pressure. Nauch. trudy KNIUI no.13:288-289 '64 (MIRA 18:1)

KICHIGIN, A.F.; MASTER, A.A.; PESIN, N. Ya.; POLOVNEV, G.P.

Economic efficiency of introducing the "Karagandinets-P" rock cutter-loader. Nauch. trudy KNIUI no.13:369-374 '64
(MIRA 18:1)

KICHIGIN, [illegible], dotsent; VASILEVSKIY, V.V., inzh.; IGNATOV, S.N., inzh.; [illegible], V.D., kand. tekhn. nauk

Investigating the breaking of sandstone as applicable to actuating mechanisms on cutter-loaders reinforced with impregnated diamond fragments. Izv. vys. ucheb. zav.; gor. zhur. 8 no.7:135-139 '65. (MIRA 18:9)

1. Karagandinskiy politekhnicheskiy institut. Rekomendovana kafedroy gornykh mashin.

KICHIGIN, A.F., dotsent; IGNATOV, S.N., inzh.; VASILEVSKIY, V.V., inzh.
SALTANOV, A.D., inzh.; YAREMA, A.D., kand.tekhn.nauk

Energy indices of rock breaking in diamond cutters of rock working cutter loaders, operating according to the principle of breaking away rock from the massif. Izv.vys.ucheb.zav.; gor.zhur. 8 no.11:94-96 '65. (MIRA 19:1)

1. Karagandinskiy politekhnicheskiy institut. Rekomendovana kafedroy gornykh mashin i rudnichnogo transporta. Submitted October 26, 1964.

MIGHIN, A.I., inzh.

Work practices at Section No.3 of the "Krasnaya Gornyanka" Mine.
Ugol' 39 no.12 33-34 D '64. (MIRA 18:1)

1. Shakhta "Krasnaya Gornyanka" tresta Krasnogorskugol'.

KICHIGIN, A. M.
KICHIGIN, A. M., LITOSHENKO, A. K. and TOLUBINSKIY, V. I. and ORNATSKIY, A. P. (All of Kiev polytechnical institute)

"Crises of heat exchange during boiling of water in very narrow annular channels".

Report presented at the Section on Heat Exchange During Change of Aggregate State, Scientific Session, Council of Acad. Sci. Ukr SSR on High Temperature Physics, Kiev, 2-4 April 1963.

Reported in Teplofizika Vysokikh temperatur, No. 2, Sep-Oct 1963, p. 321, JPRS 24,651. 19 May 1964.

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E194/E155

11.9000

AUTHORS: Ornatskiy, A.P., Candidate of Technical Sciences, and Kichigin, A.M., Candidate of Technical Sciences

TITLE: An Investigation of the Relationship Between the Critical Thermal Loading and the Rate of Flow by Weight, the Underheating and the Pressure

PERIODICAL: Teploenergetika, 1961, No.2, pp. 75-79

TEXT: Several modern branches of engineering use very high rates of heat transfer. It was accordingly necessary to investigate the relationship between the critical thermal loading, the rate of flow of fluid measured by weight, the amount by which the fluid temperature is below the saturation point (the underheating), and the pressure. The work was carried out in 1955-57 by the Faculty of Boilers of the Kiyev Polytechnical Institute, in collaboration with the Laboratories of Heat Exchange and of Heat Exchange Equipment of the Institute of Heat Power Engineering, AS Ukr.SSR. The experimental equipment was described in an article by A.P. Ornatskiy published in Teploenergetika No.6, 1960. The test piece was a tube of copper alloy with an internal

Card 1/4

87760
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E194/E155

An Investigation of the Relationship Between the Critical Thermal Loading and the Rate of Flow by Weight, the Underheating and the Pressure

diameter of 2 mm and a wall thickness of 0.4 mm. The method of preparing the test pieces and the test procedure are described. The tests covered the pressure range of 10-75 atm, speeds of 5×10^3 to 30×10^3 kg/m^2 sec, and underheating from 0-10 to 200-220 °C. Two hundred and twenty test results are tabulated. The tests were made on condensate. Curves are plotted which show that there are two regions of heat exchange, depending on the value of the heat flow. In the first region, where the wall temperature is below the saturation temperature, there is convective heat exchange and the wall temperature rises steadily as the heat transfer rate increases. In the second region, where the wall temperature is somewhat greater than the saturation temperature, bubbles of steam form in the superheated layer of liquid near the tube walls. These bubbles condense, causing turbulence in the layer near the wall, so that the heat-transfer process is greatly intensified. Here the wall temperature depends very little on the

Card 2/4

An Investigation of the Relationship Between the Critical Thermal Loading and the Rate of Flow by Weight, the Underheating and the Pressure

heat transfer rate. This region of developed surface boiling is terminated when the critical thermal loading is reached, filmwise boiling sets in and the test piece burns out. The results confirm that during the period of developed surface boiling the rate of flow and the temperature of the fluid have practically no influence on the rate of heat exchange. The value of the critical thermal loading is found to increase with the amount of underheating and the rate of flow measured by weight, and the influence of these factors depends on the degree of underheating. Moreover, if the underheating is great, the test piece usually fails in a number of places at once. The following empirical formula is recommended:

$$q_{cr} = cw_g^{0.44} \Delta t_{und}^{0.6} \text{ kcal/m}^2\text{.hr}, \qquad (1)$$

where c_4 is a constant which for pressures of 10-50 atm is 3.0×10^4 and for 75 atm 2.5×10^4; w_g is the rate of flow by

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E194/E155

An Investigation of the Relationship Between the Critical Thermal Loading and the Rate of Flow by Weight, the Underheating and the Pressure

weight, kg/m^2.sec; Δt_{und} is underheating of the liquid below the saturation temperature at the critical location, °C. About 85% of the test results lie within ± 15% of the line corresponding to this formula. Of published formulae only that of Semenov published in Teploenergetika No.4, 1959, is based on experimental data in the same range as the present investigation, and it is shown that the formula recommended above gives much higher values than were obtained by Semenov. The reasons for this are discussed and it is suggested that Semenov did not take proper account of the specific electrical resistance of his test pieces and that the roughness of the surface is important when it is comparable with the wall thickness.
There are 5 figures, 1 table and 7 Soviet references.

ASSOCIATION: Kiyevskiy politekhnicheskiy institut
(Kiyev Polytechnical Institute)

Card 4/4

23953
S/096/61/000/008/004/005
E194/E155

26.5000

AUTHORS: Ornatskiy, A.P., Candidate of Technical Sciences, and Kichigin, A.M., Candidate of Technical Sciences

TITLE: An investigation of hydraulic resistance during the flow of underheated water in a small diameter tube with high rates of heat transfer

PERIODICAL: Teploenergetika, 1961, No.8, pp. 56-60

TEXT: This article describes work carried out in the Laboratoriya teploobmena i gazodinamiki (Laboratory of Heat Exchange and Gas Dynamics) of the Kiyev Polytechnical Institute in 1957-59. The first stage of the work included two series of tests, the first with a water inlet temperature of 50 °C and the second with the inlet temperature 50 °C below the saturation points at pressures of 10, 25, 50 and 75 atm. The second stage of the work consisted of four series of tests with test sections of constant length and with temperatures of 50, 100, 150 and 200 °C below saturation at pressures of 75, 100, 125 and 150 atm. Each series of tests was carried out with the rates of flow by weight of 5000, 10000, 20000 and 30000 kg/m^{2}sec. The tests were made on

23953
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E194/E155

An investigation of hydraulic resistance during the flow of underheated water in a small diameter tube with high rates of heat transfer

tubes with an internal diameter of 2 mm. The rig was a closed circuit made of steel 1Kh18N9T (1Kh18N9T); the test section was heated by direct current and cooled by water. The instrumentation and construction of the test pieces is described. The usual measuring facilities, including those for hydraulic resistance and temperature, were provided. It was found that over the range of Reynolds numbers $R_e = 10^4 - 40 \times 10^4$ experimental values of the resistance coefficient were in satisfactory agreement with values calculated by the formulae of Blazius and Nikuradze. For values of R_e greater than 40×10^4 some of the experimental values were higher than the theoretical, apparently because at these values the tube behaves as though rough. It was found that at temperatures below the saturation value the hydraulic resistance decreases with increase in the heat-transfer rate and the wall temperature. When the temperature is above the saturation temperature, however, the resistance increases, until the heat-transfer rate reaches a

Card 2/6

23953
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E194/E155

An investigation of hydraulic resistance during the flow of under-heated water in a small diameter tube with high rates of heat transfer

critical value and the element burns out. When the temperature approximates to the saturation temperature there is a range of change of heat flux in which the hydraulic resistance remains practically constant. The second stage of the work showed that over the pressure range studied the pressure has practically no influence on the hydraulic resistance either in the region of convective heat transfer or in that of surface boiling. The combined data of the first and second stages of the work led to an empirical equation and showed that in the pressure range of 10-75 atm the hydraulic resistance in the region of surface boiling increases with decrease in pressure. The following formula may be used to determine the hydraulic resistance in the region of convective heat exchange (below the saturation temperature) under conditions of non-isothermal flow of liquid at high rates of heat transfer:

Card 3/6

23953
S/096/61/000/008/004/005
E194/E155

An investigation of hydraulic resistance during the flow of underheated water in a small diameter tube with high rates of heat transfer

$$\Delta p = \frac{0.18}{Re^{0.2}} \left(\frac{\mu_{ж}}{\mu_{ст}} \right)^{-0.25} \frac{l}{d} \cdot \frac{w_g^2}{2g\gamma} \cdot 10^{-4} \ кг/см^2, \qquad (3)$$

where: $\mu_{ж}$ is the absolute viscosity of the liquid at the mean temperature of flow; $\mu_{ст}$ is the absolute viscosity at the mean wall temperature; w_g is the rate of flow by weight, kg/m^2/sec; γ is the specific gravity, kg/m^3; l is the element length, m; d is the element diameter, m. This formula is in good agreement with one previously proposed by Academician M.A. Mikheyev; the divergence does not exceed ± 10-12%. Also this new formula more correctly reflects the tendency of the hydraulic resistance to alter with increase in the heat-transfer rate in the region of convective heat-transfer. The following empirical formula may be used to determine the resistance under conditions of surface boiling:

Card 4/ 6

23953
S/096/61/000/008/004/005
E194/E155

An investigation of hydraulic resistance during the flow of underheated water in a small diameter tube with high rates of heat transfer

$$\Delta p_{кип} = c \cdot q_{кип}^{1,2} \; w_g \; (\Delta t_{нед}^{ср})^{-1,15} \quad (kg/cm^2) \qquad (5)$$

where: $\Delta p_{кип}$ is the increment of hydraulic resistance due to transition to surface boiling; $q_{кип}$ is the heat flow in the region of surface boiling; c is a coefficient that depends on the pressure and is given by the graph of Fig.7. This equation covers 80% of the experimental points obtained in the region of developed surface boiling to within ± 20%. Some simplification of the formula is possible. The meaning of the various terms of the formula is discussed. The amount of experimental data obtained in the work was insufficient to derive design formulae for the resistance when the Reynolds number is greater than 40×10^4. There are 7 figures and 2 Soviet references.

ASSOCIATION: Kiyevskiy politekhnicheskiy institut
(Kiyev Polytechnical Institute)

Card 5/6

S/096/62/000/006/008/011
E194/E454

AUTHORS: Ornatskiy, A.P., Candidate of Technical Sciences,
Kichigin, A.M., Candidate of Technical Sciences

TITLE: Critical thermal loading and boiling of underheated water in small diameter tubes at high pressures

PERIODICAL: Teploenergetika, no.6, 1962, 44-47

TEXT: The tests were made in a closed forced circulation system made of steel 1Kh18N9T (1Kh18N9T); this system was described by the authors in earlier work (ibid. no.2, 1961). The test piece was a turned copper alloy tube with an internal diameter of 2 mm and wall thickness 0.4 mm with an effective length of 40 mm, heated by direct current and cooled by the circulating water. The general procedure was similar to that described earlier (ibid. no.2, 1961). The water used was power station condensate, particular care being taken to remove oxygen. The tests were carried out at pressures ranging from 75 to 150 atm with rates of mass flow ranging from 5000 to 30000 kg/m^2 sec and with underheat (difference between the actual steam temperature

Card 1/3

Critical thermal loading ...

and its temperature corresponding to saturation at its actual pressure) ranging from 10 to 250°C. Critical boiling was recognized by the fact that the test piece burned out. About 170 tests were made and the results are tabulated. Graphs of critical loading as a function of the amount of underheat are very similar to those obtained previously in the range of 10 to 75 atm. Curves are plotted of critical loading as a function of the amount of underheat and the rate of mass flow at various pressures and of critical loading as a function of pressure and the rate of mass flow for various amounts of underheat. On the basis of the test results presented here and those previously given (ibid. no.2,1961) the following empirical formula is recommended for the critical thermal loading q_{cr} as a function of the rate of mass flow w_g, the degree of underheat Δt_{und} at pressure p for underheat greater than 50°C.

$$q_{cr} = 6.60 \times 10^{3} . w_g^{0.6} . t_{und}^{0.6} \left(\frac{\gamma' - \gamma''}{\gamma'} \right)^{0.3} \text{ kcal/m}^2 \text{ hour}$$

where w_g - rate of flow by weight kg/m^2 sec;

Card 2/3

Critical thermal loading ...

Δt_{und} - the difference between the water temperature and the saturation point, °C; γ' - specific gravity of water at the saturation temperature, kg/m^3; γ'' - specific gravity of dry saturated steam, kg/m^3. The factor $(\gamma' - \gamma'')/\gamma'$ allows for the influence of pressure. Graphs show that 90% of points obtained in the experimental work reported in the two articles lie within ± 20% of the line represented by this formula. Similar formulae suggested by other authors are discussed and considered to be less accurate than that presented here. There are 5 figures and 1 table.

ASSOCIATION: Kiyevskiy politekhnicheskiy institut
(Kiyev Polytechnical Institute)

Card 3/3

L 27881-65

ACCESSION NR: AT5004213 S/0000/64/000/000/0010/0013

AUTHOR: Tolubinskiy, V. I. (Corresponding member AN UkrSSR); Ornatskiy, A. P. (Candidate of technical sciences); Kichigin, A. M.; Litoshenko, A. K. 14

TITLE: Heat exchange crisis for boiling in narrow annular channels B+1

SOURCE: AN UkrSSR. Institut tekhnicheskoy teplofiziki. Teplofizika i teplotekhnika (Thermophysics and heat engineering). Kiev, Naukova dumka, 1964, 10-13

TOPIC TAGS: boiling, heat exchange, heat exchange crisis, critical thermal load, heat transfer

ABSTRACT: The purpose of the investigation, performed at the Problem Laboratory of Kiyevskiy politekhnicheskiy institut (Kiev Polytechnik Institute) was to ascertain the dependence of the critical thermal load on the width of the annular gap, the weight velocity, the underheat, and the pressure. The tests were made in a closed loop made up of coaxial Kh18N9T steel tubes, each fed from a separate generator and cooled with distilled and degassed water. The parameters were: gap width -- 0.4, 0.6, and 1.0 mm; weight velocity -- 1960 to 7840 N/m^{2}sec; under-

Card 1/2

L 27881-65

ACCESSION NR: AT5004213

heat -- + 420 to - 420 kJ/kg; pressure -- 4.9, 9.8, and 14.7 MN/m^2. Unilateral and bilateral heating was used. The load was maintained constant on the inner tube at either 0.93 or 2.1 MW/m^2, and the heat load on the outer tube was varied smoothly until the heat-exchange crisis set in; this was assumed to occur when the tube turned red. The tests have shown that the critical heat load is practically independent of the underheat or the pressure if the weight velocity and gap width are constant. The critical heat load increases with increasing weight velocity. Other conditions being equal, the values of the critical heat load for unilateral and bilateral heating are practically the same. The critical heat load increases with increasing width of the annular gap. Orig. art. has: 3 figures and 4 formulas.

ASSOCIATION: Kiyevskiy ordena Lenina politekhnicheskiy institut (Kiev "Order of Lenin" Polytechnic Institute)

SUBMITTED: 10Aug64 ENCL: 00 SUB CODE: TD

NR REF SOV: 000 OTHER: 000

Card 2/2

ACC NR: AP6032186 (N) SOURCE CODE: UR/0096/66/000/010/0066/0069

AUTHOR: Ornatskiy, A. P. (Candidate of technical sciences); Kichigin, A. M. (Candidate of technical sciences); Glushchenko, L. F. (Candidate of technical sciences)

ORG: Kiev Polytechnical Institute (Kiyevskiy politekhnicheskiy institut)

TITLE: Studying critical heat flux in annular channels during external heating

SOURCE: Teploenergetika, no. 10, 1966, 66-69

TOPIC TAGS: heat flux pickup, heat transfer, heat measurement, flow velocity

ABSTRACT: Experimental data are given on the magnitude of critical heat flux as a function of mass velocity, pressure and underheating during forced circulation of water in annular channels under conditions of unilateral heating. The experiments were carried out at the Laboratory of Heat Exchange Problems and Gas Dynamics of Kiev Polytechnical Institute in 1963-1964 at pressures of 9.8, 24.5, 49.1, 73.6, 98.1, 122.5, 147, 172, 186.4, 196, 201 and 216 bars with underheating variation limits of +750 to 100 KJ/kg. The basic tests were done at mass velocities of 1000 and 2000 $kg/m^2 \cdot sec$. All experiments were carried out under external heating conditions. A diagram is given showing the experimental unit. A comparison of the experimental and theoretical data shows disagreement which is apparently due to the fact that most of the work on this problem has been done at higher mass velocities that were used in this study. An empirical formula is given for calculating the magnitude of critical heat flux for engineering purposes. Orig. art. has: 7 figures, 1 table, 1 formula.

SUB CODE: 20/ SUBM DATE: None/ ORIG REF: 008

Card 1/1 UDC: 536.24.532.3.536.68

TAGIYEV, E.I.; KICHIGIN, A.V.

Effect of certain parameters of vibropercussion machines on rock desintegration speed. Izv. vys. ucheb. zav.; neft' i gaz 2 no.7:17-24 '59. (MIRA 12:12)

1.Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akad. I.M. Gubkina.
(Boring machinery)

TAGIYEV, E.I.; KICHIGIN, A.V.

Wear resistance of simple bits when using vibropercussion drilling machinery. Izv.vys.ucheb.zav.; neft' i gaz 2 no.11: 31-36 '59. (MIRA 13:4)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M.Gubkina.
(Boring machinery)

KICHIGIN, A. V. Candidate of Technical Sciences (diss.) "Research into the effect of parameters of vibration-hammer machines and boring conditions on the effectiveness of the performance of chisels in vibration and in vibration-rotatory boring of coal-faces." Moscow, 1960. 14 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Moscow Order of Labor Red Banner Inst of Petrochemical and Gas Industry im I. M. Gubkin); 170 copies; price not given; (KL, 19-60, 134)

VOSKRESENSKIY, Fedor Fedorovich; KICHIGIN, Anatoliy Valentinovich; SLAVSKIY, Vasiliy Mikhaylovich; SLAVSKIY, Yuriy Nikolayevich; TAGIYEV, Eyyub Izmailovich; DUBROVINA, N.D., vedushchiy red.; FEDOTOVA, I.G., tekhn. red.

[Vibration and combination drilling] Vibratsionnoe i udarno-vrashchatel'noe burenie. By F.F.Voskresenskii i dr. Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1961. 243 p. (MIRA 14:9)

(Boring)

KICHIGIN, A.V., kand.tekhn.nauk; KOYFMAN, A.N., inzh.; POPOV, V.S.

Use of hydraulic strikers for drilling verical boreholes. Shakht. stroi. 6 no.11:21-23 N '62. (MIRA 15:12)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti (for Kichigin). 2. Vologorodskoye SShPU Vsesoyuznogo tresta po prokhodke shakht Glavtsentroshakhtostroya Ministerstva stroitel'stva predpriyatiy ugol'noy promyshlennosti SSSR (for Popov).
(Rock drills—Hydraulic equipment)

ILGIYEV, E.I., VINOGRADOV, V.N.; NURGALIYEV, R.M.; KASHIRIN, A.F.

Wear of the parts of hydraulic percussive equipment and a unit for testing them for durability. Izv.vys.ucheb.zav.; neft' i gaz 7 no.4:111-119 '64. (MIRA 17:6)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika Gubkina.

BROUN, S.I.; KICHIGIN, A.V.; PERLOV, I.N.

Percussive-rotary drilling of structural-prospecting wells with hydraulic-percussion equipment. Burenie no.10:10-13 '64.
(MIRA 18:6)

1. Moskovskiy ordena Trudovogo Krasnogo Znameni institut neftekhimicheskoy i gazovoy promyshlennosti im. akad. Gubkina.

KICHIGIN, Anatoliy Valentinovich; NAZAROV, Viktor Ivanovich; TAGIYEV, Eyyub Izmaylovich

[Percussive-rotary drilling of wells] Udarno-vrashchatel'noe burenie skvazhin. Moskva, Nedra, 1965. 165 p. (MIRA 19:1)

SOV-120-58-3-16/33

AUTHORS: Galkin, A. A., Kichigin, D. A.

TITLE: A Device for Electron Resonance Studies over a Wide Temperature Range (Pribor dlya izucheniya elektronnogo rezonansa v shirokoy oblasti temperatur)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1958, Nr 3, pp 71-72 (USSR)

ABSTRACT: Zavoyskiy's original simple grid-current method of studying EPR resonance is modified by inserting a semiconductor between the plates of the condenser in the oscillatory circuit. The semiconductor has to be one which is of good light sensitivity; then the loss component introduced by the semiconductor can be evaluated by illuminating it with a chopped light beam of known strength. A method is thereby provided of standardizing the oscillatory circuit if the EPR line varies in any way with temperature, since the semiconductor can be kept on strictly standardized conditions. The coaxial line to the coil round the specimen is constructed of German silver (to minimize heat transfer). The

A Device for Electron Resonance Studies over a Wide Temperature Range

semiconductor (Cu_2O) is illuminated via holes in one of the plates of the capacitor. The article contains 1 figure and 2 references, both (Soviet) to Zavoyskiy's original studies.

ASSOCIATION: Institut radiofiziki i elektroniki AN USSR (Institute of Radiophysics and Electronics, Academy of Sciences, Ukrainian SSR)

SUBMITTED: September 9, 1957.

1. Electrons--Resonance 2. Resonance---Temperature factors
3. Semiconductors--Applications

Card 2/2

AUTHORS: Galkin, A. A. and Kichigin, D. A. SOV/65-58-7-2/12

TITLE: Investigations on the Paramagnetic Resonance in Coal From the Donets Basin (Issledovaniye paramagnitnogo rezonansa v kamennykh uglyakh Donetskogo basseyna).

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr.7. pp. 8 - 14. (USSR).

ABSTRACT: Investigations on the structure of substances can be carried out by defining the paramagnetic resonance. It was aimed to find the connection between the geological growth of coal and the intensity and width of the paramagnetic resonance (PR) line. The present studies concerned the PR in the component structure of coal which helped during investigations on the PR in coals of various petrographic composition. Apart from this, the PR curves can be used for defining some physico-chemical constants. The method of Ye.K. Zavoyskiy (Ref.9) was used. Setting up of the apparatus: Fig.1; samples of coal from the Donets Basin, differing in their geological growth and technical and petrographic composition, were tested. The intensity of the PR line is maximal in anthracite and minimal in slow-burning coal. This agrees with the findings of S. Uebersfeld et al (Ref.3). Fig.2: a diagram on the dependence of the intensity of the PR line on the

Card 1/3

Investigations on the Paramagnetic Resonance in Coal From the Donets Basin.

geological growth of coal samples. Tests were carried out on fusite (mineral charcoal), vitrain gas coal (a variety of bituminous coal), and also on some samples of fusite slow-burning coal and coke. It was concluded that a relationship exists between the intensity of the PR line and the degree of metamorphosis of the coal, and that the former increases with increasing geological growth of coal (Fig.3). The width of the PR line of various types of anthracite ranges from 0.5 to 3.5 oersteds, and for other coals it ranges from 6 - 7 oersteds. The structural components of coal affect the width and the intensity of the PR line. The PR line of fusite of coke, gaseous, and slow-burning coal is identical within the limits of experimental error. The static spin susceptibility of coal was calculated by comparing the intensity of the electronic and nuclear resonances, and from this the order of magnitude of the concentration of electrons in one gram of coal determined. There are 2 Tables, 3 Figures and 12 References: 5 Soviet, 4 English and 3 French.

Card 2/3

SOV/65-58-7-2/12

Investigations on the Paramagnetic Resonance in Coal From the Dor Basin.

ASSOCIATION: Kharkovskiy pedagogicheskiy institut. (Kharkov Teachers' Institute).
Institut radiofiziki i elektroniki AN USSR (Institute of Radiophysics & Electronics of the USSR Academy of Sciences)

1. Coal--Structural analysis 2. Coal--Magnetic factors

Card 3/3

SOV/126-6-4-33/34

AUTHORS: Galkin, A. A. and Kichigin, D. A.

TITLE: Influence of Plastic Deformation on the Width of the Electron Resonance Line (Vliyaniye plasticheskoy deformatsii na shirinu linii elektronnogo rezonansa)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 4, p 767-768 (USSR)

ABSTRACT: A number of papers (Refs 1-6) are devoted to investigating electron resonance in metals. In these, the dependence of the width of the line on the temperature, the quantity of admixtures and the particle size have been investigated in detail. In this paper experiments are described on elucidating the influence of plastic deformation on the resonance effects. It is known that in the case of plastic deformation residual microstresses accumulate in a crystal which lead to an excess of potential energy (Ref 7). However, if investigation of the plastic deformation is effected at room temperature, it has relatively little influence on the electric conductivity and the Hall effect of the metals. The width of the electron resonance line for lithium is

Card 1/4

Influence of Plastic Deformation on the Width of the Electron Resonance Line

sensitive to admixtures (Ref 6). Therefore, the influence of plastic deformation on the electron resonance was investigated for lithium, specimens of which were plastically deformed by rolling on glass at room temperature. The specimens were rolled down to a thickness of 0.1 to 0.05 mm. After rolling, the foil was coiled and placed into a glass ampule filled with dehumidified oil. The ampule with the specimen was placed into the coil of an oscillator circuit operating at 350 Mc/sec. The indication of electron resonance was by means of the method of Zavoyskiy (Ref 8). The width of the electron resonance line after plastic deformation was 20 Oe. Thus, plastic deformation of lithium at room temperature led to an increase to double of the width of the line. After "annealing" of the foil, effected at room temperature, the width of the line contracts reaching 10 Oe, after 40 to 60 hours. For elucidating the kinetics of removing the stresses in lithium, a series of measurements were carried out of the dependence of the width of the line on the time for the

Influence of Plastic Deformation on the Width of the Electron Resonance Line

annealing temperature 293 and 373°K. For this purpose, after rolling at 293°K the foil was cut into two halves and the obtained specimens were annealed at 293 and 375°K. The graph, Fig 1, shows the dependence of the width of the line on the time for the two specimens; as was to be expected annealing at 100°C is considerably faster than at 20°C. From the temperature curves $\Delta H(t)$ the activation energy was calculated which was found to equal about 1500 cal/mol. A similarly small activation energy during plastic deformation was also observed by Khotkevich (Ref 7). It is possible that the dependence of the width of the line on the dimensions of the particles observed by Garif'yanov (Ref 5) can be explained by the fact that in finer particles the residual deformations, caused during the breaking up, are

Influence of Plastic Deformation on the Width of the Electron Resonance Line

removed almost instantaneously, whilst the removal of the deformations in larger particles is a considerably slower process. In Fig.1 the dependence is graphed of the width of the resonance curve (Oe) on the annealing time (hours). The top curve relates to annealing at room temperature, the bottom curve relates to annealing at 600°C.

There are 1 figure and 8 references, 3 of which are Soviet, 5 English.

(Note: This is a complete translation)

ASSOCIATION: Khar'kovskiy pedagogicheskiy institut (Khar'kov Pedagogic Institute)

SUBMITTED: April 8, 1957

5.5400

~~28(4)~~

S/032/60/026/02/036/057
B010/B115

AUTHOR: Kichigin, D. A.

TITLE: Paramagnetic Resonance Gas Analyzer for the Determination of Oxygen

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol 26, Nr 2, pp 211-214 (USSR)

ABSTRACT: A new type of a gas analyzer is described the principle of which is based on the influence of a paramagnetic gas (oxygen) on the line intensity of paramagnetic resonance in fine anthracite powder. In dispersed, fine anthracite powder ($\leq 5\ \mu$), a complete absorption of the line of paramagnetic electron resonance takes place. If, however, the anthracite powder is kept in vacuum, the resonance line reappears. This change is to be attributed to the partial pressure of oxygen, exclusively, and could be thus used to determine the latter in amounts varying between 3.10^{-2}% and 7.10^{-1}% in diamagnetic gases (helium, hydrogen, nitrogen, etc). The device designed for this purpose (cf scheme in figure 3) consists of a high-frequency generator (110 cps, 6S1P valve), a broad-band amplifier, a direct-current amplifier, a stabilized current-supply unit, and a tank for the gas samples provided with a solenoid. The paramagnetic

Card 1/2

Paramagnetic Resonance Gas Analyzer for the Determination of Oxygen

S/032/60/026/02/036/057
B010/B115

losses in the sample are considered by Zavoyskiy's method. Voltage (proportional to the losses in the anthracite powder) is taken by the resistor of the mains circuit of the generator after a preliminary amplification (6N2P), and is transmitted to the direct-current amplifier (6Kh2P, 6N9). A microammeter calibrated to indicate oxygen admixtures in per cents, is connected to the cathode circuit of the amplifier. The device was calibrated for 20°, since the influence of oxygen on the electron resonance in the anthracite powder increases with a temperature rise, and decreases with a temperature drop. There are 3 figures and 1 Soviet reference.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk USSR (Institute of Radiophysics and Electronics of the Academy of Sciences of the UkrSSR)

KICHIGIN, D.A.[Kichyhin, D.O.]

Temperature dependence of the effect of oxygen on electronic resonance in coal powders. Ukr. fiz. zhur. 6 no.2:255-262 Mr-Ap '61. (MIRA 14:6)

1. Institut radiofiziki i elektroniki AN USSR, g. Khar'kov.
(Paramagnetic resonance and relaxation)
(Coal, Pulverized)
(Oxygen)

L 21228-65 EWT(l)/EWP(...)/... [illegible]

ACCESSION NR: AP5005294 S0181/65/007/002/0470/0473

AUTHOR: Lopachev, I. E.; [illegible]

22
19
B

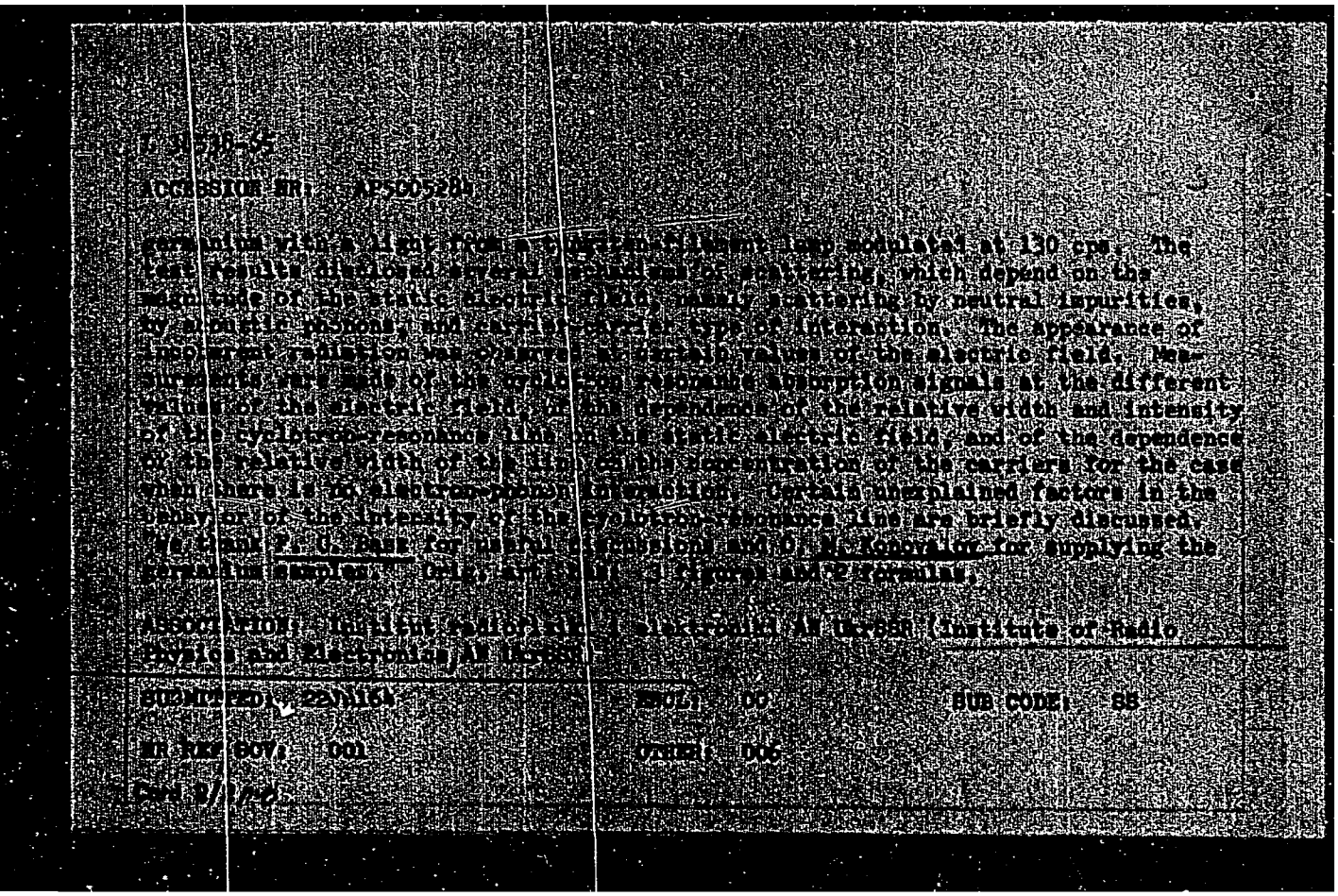
TITLE: Cyclotron resonance on hot electrons

SOURCE: Fizika tverdogo tela, v. 7, no. 2, 1965, 470-473

TOPIC TAGS: cyclotron resonance, high temperature electron, electron impurity scattering, electron phonon scattering, carrier carrier interaction

ABSTRACT: The authors investigated the influence of an electric field on the cyclotron-resonance line in germanium at 1.5K and a frequency ~37,000 Mcs. A superheterodyne spectrometer was used with sensitivity 10^{-11} mole of DPPH free radical, the signal being recorded on the chart of an automatic recorder. A sample of n-type germanium doped with nickel (resistivity 49 ohm-cm), measuring 0.5 x 0.5 x 3.3 mm was placed in the antinode of the electric field of a rectangular cavity operating at the TE_{102} mode. In all the experiments the electric current flowing through the sample was at right angles to the external magnetic field. The sample was in direct contact with the liquid helium, so that its temperature was accurate to 10^{-3} deg. The nonequilibrium carriers were excited by illuminating the

Card 1/2



LOBACHEV, V.P.; MISHIGIN, D.A.

Cyclotron resonance on hot electrons. Fiz. tver. tela 7 no.2:470-473 F '65. (MIRA 18:8)

1. Institut radiofiziki i elektroniki AN UkrSSR, Khar'kov.

L 21228-66 EWT(m)/EWP(t) IJP(c) JD/HW
ACC NR: AP6003801 SOURCE CODE: UR/0181/66/008/001/0249/0251

AUTHORS: Kichigin, D. A.; Lobachev, V. P.

ORG: Institute of Radiophysics and Electronics AN UkrSSR Khar'kov (Institut radiofiziki i elektroniki AN UkrSSR)

TITLE: Negative conductivity in germanium with nickel impurity 49 B

SOURCE: Fizika tverdogo tela, v. 8, no. 1, 1966, 249-251

TOPIC TAGS: germanium, semiconductor conductivity, volt ampere characteristic, electric resistance, impurity conductivity

ABSTRACT: The purpose of the investigation was to determine some of the causes of negative resistance of doped semiconductors. The authors measured the volt-ampere characteristics of germanium doped with nickel at 77 and 4.2K. The sample was a bar measuring 0.35 x 0.2 x 2.8 mm, in series with which an additional resistor was connected. The voltage drop on the sample and the resistor were displayed on an oscilloscope screen. Depending on the illumination of the sample, on the magnetic field, and on the angle between the field

Card 1/2

L 21228-66
ACC NR: AP6003801

and the currents of the sample, the volt-ampere characteristic assumed different forms and exhibited the following features: 1. At fairly high illumination (15 -- 35 relative units), the voltage-ampere characteristics coincide fully for both increasing and decreasing voltage. At low illumination (up to 12 relative units), a hysteresis is observed. 2. With increasing illumination (to more than 50 relative units) the negative-resistance portion of the volt-ampere characteristic disappears. The application of a magnetic field (7 -- 10 kOe) causes the appearance of a double N-shaped characteristic. At low illuminations the influence of the magnetic field on the volt-ampere characteristics is different, and the section with the negative resistance shifts with increasing magnetic field towards larger electric fields, and increases with magnitude. Similar results were obtained at helium temperatures. The nature of the influence of the illumination of the sample on the volt-ampere characteristic and the effect of the magnetic field are still not clear. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 24Jul65/ ORIG REF: 004/ OTH REF: 006

Card 2/2dda

KICHIGIN D.O.

S/185/61/006/002/015/020
D210/D304

AUTHOR: Kichyhin, D.O.

TITLE: The temperature dependence of the influence of oxygen on electronic resonance in coal powders

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 6, no. 2, 1961, 255 - 262

TEXT: Results are given of investigations of the influence of oxygen on the line of electronic paramagnetic resonance (EPR) in powders of anthracite and some sorts of low quality coal and coking coal, at the frequency of 280 megacycles, according to the method described by A.A. Galkin, D.A. Kichigin (Ref. 6: Khimiya i tekhnologiya topliva, no. 7, 1958). Following data are given on figures: 1) Dependence of intensity of the EPR line on time, the anthracite powder being kept in air at 0.1 mm mercury column; 2) Dependence of intensity of the EPR line of anthracity powder on the air pressure; 3) Dependence of width of the EPR line of anthraci-

Card 1/4

te powder on air pressure; 4) Dependence of concentration of free radicals in 1 g of anthracite powder on air pressure (this dependence is linear, deviations from linearity being observed in the interval 10^{-1} - $4 \cdot 10^{-1}$ mm of mercury column); 5) Dependence of intensity of the EPR line on time, anthracite powder being kept in air at different low temperatures at 760 mm pressure; 6) Dependence of the time during which the intensity of the EPR line decreases to one half, on inverse absolute temperature (pressure - 760 mm). A photograph of the curves of paramagnetic resonance absorption in low-temperature coal is given. To check the assumption that the broadening of the line is due to the orientation of oxygen molecules at the surface of the specimen (apart from their velocity), influence of nitric oxide on the EPR line in the powders of anthracite and DFPG (α-diphenyl-ββ-picrylhydrosyl) was investigated. The width of the EPR line was found to decrease when temperature was lowered (contrary to oxygen). The attempt to investigate the temperature dependence of NO on the line failed owing to polymerization of NO at low temperatures. In powders of low-temperature coal the oxygen affects the width and form of the EPR

Card 2/4

line but not its intensity. The experimental curves were analyzed according to the method of N.N. Tikhomirova and V.V. Voyevodskiy (Ref. 11: Opt. i spektr. 7, no. 6, 1959): it was found that the resonance curves satisfy Gauss' equations, but from the point corresponding to maximum of derivative of line intensity with respect to the magnetic field, to the point corresponding to resonance value of the field, neither Gauss' nor Lorentz' equations are satisfied. The resonance curves of absorption of specimens kept a 0.1 mm air pressure during 5 - 7 hours satisfy Gauss' equations at the base, other parts of the curves satisfy Lorentz' equations. Some values of medium line width for different pressures and temperatures are given in a table. The conclusions are: The influence of oxygen on the width and intensity of the EPR line is explained by the presence of two kinds of adsorption of oxygen on coal (physical and chemical); the EPR line in anthracite powder is completely restored below 0.1 mm of air pressure; at contact temperatures of oxygen with the specimen below 95°K the influence of oxygen on the line disappears; in anthracite powders the EPR line becomes weaker

without width change at contact temperatures below 205°K; the activation energy of oxydation of free radicals in anthracite is 3-5 kcal/mol; presence of oxygen on the surface of low-temperature coal powder eliminates or weakens the exchange interactions. N.S. Garafyanov and B.M. Kozyrev (Ref. 5: DAN SSSR, 118, 4, 1958) are mentioned for their contributions in the field. The author expresses his gratitude to Professor A.A. Galkin for his advice and interest. There are 7 figures, 1 table and 12 references: 7 Soviet-bloc and 5 non-Soviet-bloc. The references to English-language publications read as follows: L.S. Singer and W.J. Spry, Bul. Amer. Phys. Soc. 214, 1956; D.E.G. Austen, D.I.E. Ingram, I.C. Tapley, Trans. Faraday Soc., 54, 3, 1958.

ASSOCIATION: Instytut radiofizyky i elektroniky AN URSR, m. Kharkiv (Institute of Radio Physics and Electronics, AS UkrSSR, Khar'kov)

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AUTHOR: Alikhanov, S. G. (Novosibirsk); Budker, G. I. (Novosibirsk); Kichigin, G. N. (Novosibirsk); Komin, A. V. (Novosibirsk)

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B

ORG: none

TITLE: Implosion of a metal liner by the action of a magnetic field

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 4, 1966, 38-41

TOPIC TAGS: implosion, metal liner implosion, magnetic implosion, plasma heating, megagauss field, megagauss magnetic field, STRUCTURE DYNAMIC STABILITY, STRUCTURE STABILITY

ABSTRACT: The experimental results of theta-pinch of metal liners by the action of a magnetic field of a single-turn solenoid are presented and compared with theoretical data on the collapse mechanics of liners. The charge of a 5 x 10^{-2} f condenser at a voltage of 4 kv was used to activate the solenoid. AD-1N (aluminum) and M-1 (copper) cylindrical liners 80 mm in outside diameter and 150 mm long were used. Wall thickness was 2.5 mm with the aluminum liner and 1 mm with the copper liner; weight was 250 g and 350 g, respectively. The circuit current and battery voltage were recorded along with other data during the experiment. A series of photographs taken from the end projection of the

Card 1/2

L 43734-66

ACC NR: AP6030920 3

liner during the process of collapse showed that the liner's cross-section area remains constant and that its cylindricality is unimpaired. An analysis of the interrelationship existing between the stage of collapse, the speed of collapse, and the circuit current showed that most of the acceleration occurs during the first half of travel, viscosity of the material and the central air pad causing a decrease in acceleration during the second half prior to the explosion. The ensuing vapor cloud, having a reduced inductance because of its expansion, is said to explain the continuation of the current peak of 2.8×10^6 Ma in the circuit after the collapse. The copper liner displayed the same characteristics of the process as the aluminum liner. The kinetic energy of the liner acquired in acceleration reached 100 kJ at 35 percent efficiency. This energy level is considered to be of practical interest for such applications as plasma heating and the production of megagauss magnetic fields. The authors thank V. A. Polyakov and V. G. Belan for help in carrying out the experiment. Orig. art. has: 5 figures and 4 formulas. [FP]

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KICHIGIN, N. M. AND V.A. NOVIKOV

Sveklopogruzchik sistemy Obryvko. Moskva, Pishchepromizdat, 1950. 56 p.

(The best loader of Obryvko system.)

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953

1. NOVIKOV, V.A.: KICHIGIN, N.M. & NEMTSOV, V.G.: KANDOBIN, A.S.: GEL'MAN, A. Ya.

2. USSR (600)

4. Motor Trucks

7. UKAP - TsINS universal truck with conveyer-loader. Mekh. trud. rab. 6, no. 10, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

1. KICHIGIN, N.M., YEMSTOV, V.G., KAZDOVIN, A.S., GEL'MAN, A.Y., NOVIKOV, V.A.
2. USSR (600)
4. Reservoirs
7. Cleaning water supply reservoirs at sugar factories. Sakh.prom. 26, no. 12, 1952

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

NOVIKOV, V.A.; KICHIGIN, P.M.

Cleaning of sugar beets harvested by sugar combines. Sakh.prom. 30 no.8:15-20 Ag. '56. (MLRA 9:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut sakharnoy promyshlennosti.
(Sugar beets)

KICHIGIN, N.M.

Effect of the dynamic factors on the operation of the TL-2-TSIES loader. Sakh. prom. 31 no.1:51-57 Ja '57. (MLRA 10:4)

1. TSentral'nyy nauchno-issledovatel'skiy institut sakharnoy promyshlennosti.
(Tractors) (Loading and unloading)

SOV/118-58-11-13/19

AUTHORS: Novikov, V.A. and Kichigin, N.M., Candidates of Technical Sciences

TITLE: The Tractor-Shovel TL-TsINS (Traktornaya lopata TL-TsINS)

PERIODICAL: Mekhanizatsiya trudoyëmkikh i tyazhëlykh rabot, 1958, Nr 11, pp 37-40 (USSR)

ABSTRACT: Until now tractor-shovels of the type TL-2-TsINS mounted on SKhTZ-NATI or DT-54 tractors have been used in loading and unloading coal, peat and sugar. Practice has shown that this type possesses certain deficiencies such as poor maneuvrability insufficient stability, etc. To improve operating reliability, the experimental models (TL-3-TsINS and TL-4-TsINS) have been designed. These are now being tested. There are 2 photographs, 2 sets of diagrams, and 1 table.

1. Tractors--Equipment 2. Materials--Handling 3. Earth moving equipment--Design 4. Earth moving equipment--Performance

Card 1/1

Kichigin N.M.

NOVIKOV, V.A.; KICHIGIN, N.M.; PECHENYY, Kh.D.; VASIL'YEV, V.I.

Results of the use of an imported beet piler at the Salivonkovskii Sugar Factory. Sakh. prom. 32 no.1:45-53 Ja '58. (MIRA 11:2)

1. Tsentral'nyy nauchno-issledovatel'skiy institut sakharnoy promyshlennosti.

(Sugar industry--Equipment and supplies)
(Loading and unloading)

NOVIKOV, V.A.; KICHIGIN, N.M.

New TL-4-TsINS and TL-3-TsINS tractor-mounted shovels. Sakh. prom. 32 no.4:33-37 Ap '58. (MIRA 11:6)

1.TSentral'nyy nauchno-issledovatel'skiy institut sakharnoy promyshlennosti.

(Shoveling machines) (Sugar beets)

NOVIKOV, V.A.; KICHIGIN, N.M.

New rail side beet piler. Sakh. prom. 32 no.5:32-36 My '58.
(MIRA 11:6)

1.TSentral'nyy nauchno-issledovatel'skiy institut sakharnoy promyshlennosti.
(Sugar industry--Equipment and supplies)

NOVIKOV, V.A.; KICHIGIN, N.M.; YATSENKO, V.S.

Cleaning of beets harvested by combine. Sakh. prom. 32 no.8:12-18 Ag '58. (MIRA 11:9)

1.TSentral'nyy nauchno-issledovatel'skiy institut sakharnoy promyshlennosti.

(Sugar beets--Harvesting)

NOVIKOV, V.A.; KICHIGIN, N.M.

Prospective types of an unloading and piling machines. Sakh. prom. 32 no.12:18-23 D '58. (MIRA 11:12)

1.TSentral'nyy nauchno-issledovatel'skiy institut sakharnoy promyshlennosti.
(Loading and unloading)
(Sugar industry--Equipment and supplies)